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REMARKS

In response to the non-final office action of October 7, 2004, applicant asks that all claims be allowed in view of the amendment to the specification and the following remarks. Claims 1-39 are pending in this application, of which claims 1, 13, and 25 are independent. Claims 1, 13 and 25 have been amended.

Amendment to Specification

An objection was made to the specification for lacking the necessary reference to the prior application. As an administrative matter, applicant respectfully notes that a preliminary amendment was filed concurrently with the present continuation application on March 16, 2004. For convenient reference, applicant submits a copy of the preliminary amendment and a copy of the postcard noting the submission of the preliminary amendment and stamped received by the PTO Mailroom on March 16, 2004. The preliminary amendment included an amendment to the specification providing a reference to the prior application.

The objection also called for an indication of the status of the priority application. In satisfaction of this request, applicant amends the reference to include the current status of the parent nonprovisional application.

Claim Amendments Submitted March 16, 2004 Not Addressed by Office Action

As noted above, a preliminary amendment was filed on March 16, 2004. In addition to the addition of priority information noted above, the March 16, 2004 preliminary amendment provided amendments to claims 1, 13 and 25 and added new claims 37-39. The non-final office action of October 7, 2004 indicates the action is responsive to the applicant's communication filed on March 16, 2004. However, the non-final office action addresses only claims 1-36 and fails to address claim changes presented in the March 16, 2004 preliminary amendment, leaving the applicant without a means for advancing prosecution. Therefore, applicant respectfully requests a new non-final office action that addresses all of the pending claims, including claims 37-39, and all features of the pending claims, including the amendments previously made to claims 1, 13 and 25.

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To be complete in this response to the October 7, 2004 Office action, the following remarks emphasize some of the points of distinction between the amended claim set and the applied references.

Rejection under Section 102

Claims 1-9, 11, 13-21, 23, 25-33, and 35 were rejected under 35 U.S.C. § 102(b) as being anticipated by Fujita (U.S. Patent No. 5,513,110). Applicant requests reconsideration and withdrawal of this rejection because Fujita does not describe or suggest the subject matter of independent claims 1, 13, and 25.

Claim 1 recites a method of determining a preferred route using a computer-implemented routing system. Claim 1 recites, *inter alia*, using a routing system to access an origin and a destination in a routing graph representing a network of roads that includes two or more nodes and two or more directed links. Each directed link is associated with a direction of travel from a starting node to an ending node and represents a road. Each node represents an intersection that includes at least one road. At least two of the directed links are associated with two nodes that are the same such that (1) a starting node of a first link of the at least two directed links is a same node as an ending node of a second link of the at least two directed links and (2) an ending node of the first link of the at least two directed links is the same node as a starting node of the second link of the at least two directed links.¹ The method also includes using the routing system to determine a preferred route from the origin to the destination by using at least one directed link, and communicating the preferred route from the routing system to a user system. Claims 13 and 25 each recite similar features in the context of a computer-readable medium and a system, respectively. Claims 2-12, 14-24, and 26-39 depend from claims 1, 13 or 25, respectively.

Fujita is directed to an in-vehicle navigation system that searches for a recommended path toward a final destination and also indicates the current position and *traveling direction of the vehicle* along the recommended path. *See* Fujita at col. 1, lines 7-11. In particular, the navigation system includes a hierarchy of roads that are sequentially searched by the navigation system to find a path from a departure point to a destination point. *See* Fujita at col. 2, lines 50-

¹ Applicant notes that the Office Action of October 7, 2004 does not explicitly address this element of claim 1, which was added in the preliminary amendment filed concurrently with the present continuation application on March 16, 2004.

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65. Fujita discloses finding a road in a higher level of the hierarchy that is nearest to a particular position in a lower level of the hierarchy. See Fujita at col. 6, line 29 to col. 7, line 15 and col. 11, lines 43-59. This is done to limit the number of nodes to be searched. See Fujita at col. 6, lines 17-26. In particular, the hierarchy of roads disclosed in Fujita includes "network data consisting of nodes showing intersections and links showing the relationship between the intersections." Fujita at col. 4, lines 63-67. A "node number is assigned to each of the nodes, which permits the particular node to be uniquely identified. Even when the connection between the nodes bridges the adjacent management areas, the node numbers of the connecting nodes are registered in the corresponding links." Fujita at col. 5, lines 2-7.

According to the plain text of Fujita, a node shows an intersection and a link shows the relationship between two intersections. A link in Fujita connects two intersections and is therefore non-directional (or bi-directional), such that the link connects one intersection to the other intersection in each travel direction between the intersections. Thus, the link in Fujita is not a directed link that is associated with a direction of travel from a starting node to an ending node, as recited in claim 1. Moreover, Fujita does not disclose a network of roads in which at least two of the directed links are associated with two nodes that are the same such that (1) a starting node of a first link of the at least two directed links is a same node as an ending node of a second link of the at least two directed links and (2) and an ending node of the first link of the at least two directed links is the same node as a starting node of the second link of the at least two directed link, as recited in claim 1.

Further, while Fujita discusses a direction of travel, Fujita merely uses this direction of travel as reference information in navigating Fujita's bi-directional links. For example, Fujita, in FIGS. 11A-11C, discloses a displayed network of roads in which the direction of travel of the vehicle toward the destination point is shown. See Fujita at FIGS. 11A-11C and col. 10, lines 21-28 (stating "[i]f the current position is the road of the uppermost level, a path connecting with an intersection which is nearest the destination point in the traveling direction of the vehicle is offered as the temporary guidance suggestion to the driver after the guidance request has been made. The guidance suggest[ion] on this occasion can be given in such a way that a display as shown in FIG. 11A or FIG. 11B is presented on the display means 106."). Fujita also discloses in FIG. 13 "a diagram showing the situation of the determination of a search starting point in a

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higher hierarchy" in which "one of the nodes is selected as a search starting point at the higher level on the basis of the direction of the opposite search starting point (on the side of the destination point as opposed to the side of the point of departure) and the *traveling direction of the vehicle*." See Fujita at col. 3, lines 66-67 and col. 11, lines 46-53 (emphasis added). See also Fujita at FIG. 13 (showing text describing the depicted arrow as indicating that the arrow represents the "DIRECTION OF DESTINATION POINT") and col. 11, lines 54-59 (stating "[i]n the case of FIG. 13, among the intersections between the roads of the higher level, the intersection which is near the direction of the destination point and which is included within a predetermined angular extent from the traveling direction is set as the search starting point at the higher level.").

Thus, the direction of travel disclosed in Fujita is a direction of travel that is an attribute of the vehicle in which the navigation system of Fujita resides and is not a direction of travel that is permitted on a road. See Fujita at col. 2, line 57; col. 10, line 24; col. 11, line 53; and col. 13, line 65 (all describing "a traveling direction of a vehicle"). Assuming for the sake of argument that a road of Fujita corresponds to a link in claim 1, Fujita merely discloses a link and necessarily does not disclose a directed link being associated with a direction of travel from a starting node to an ending node.

Moreover, Fujita discloses link data that represents connections between intersections but does not disclose that a direction of travel is associated with link data. See Fujita at col. 12, line 49. Nor does Fujita disclose a direction of travel attribute that is associated with road data. See Fujita at col. 12, lines 44-59 and col. 13, lines 50-65. Because Fujita does not describe or suggest a directed link, Fujita necessarily cannot disclose using a directed link to determine a preferred route from the origin to the destination, as recited in claim 1.

More particularly, the Office Action cites column 10, lines 11-60, and FIGS. 11 and 13 as showing a directed link associated with a direction of travel. See the Office Action of October 7, 2004 at page 2. The cited portions of Fujita, however, describe only a direction of travel of a vehicle, and do not describe or suggest a direction of travel associated with the road itself.

In particular, FIGS. 11A-11C of Fujita illustrate examples of a display of an on-board navigation system that show a suggested route and a traveling direction of the vehicle. *See* Fujita at FIGS. 11A-11C and col. 10, lines 25-28 (stating "[t]he guidance suggest[ion] on this occasion

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can be given in such a way that a display as shown in FIG. 11A or FIG. 11B is presented on the display means 106."). Thus, FIGS. 11A-11C depict a presentation of a network of roads and a direction of travel of the vehicle. As such, the direction of travel is an attribute of the vehicle and is not attribute of a road in the displayed network of roads. Accordingly, the network of roads and direction of travel of the vehicle in FIGS. 11A-11C does not constitute a routing graph that represents a network of roads including two or more nodes and two or more directed links, with at least one directed link being associated with a direction of travel from a starting node to an ending node, as recited in claim 1. Moreover, FIGS. 11A-11C disclose only how the results of determining a route are displayed and, hence, FIGS. 11A-11C do not disclose using at least one directed link to determine a preferred route from the origin to the destination, as recited in claim 1.

With respect to column 10, lines 11-60, Fujita discloses determining a route "by utilizing the information of the current position of the vehicle" to search for "a path extending to the road of a higher hierarchy." Fujita at col. 10, lines 12-14. Fujita also discloses using the traveling direction of the vehicle to search for "a path connecting with an intersection which is nearest the destination point" when the current position of the vehicle is the road of the uppermost level of the hierarchy. Fujita at col. 10, lines 21-25. *See also* Fujita at col. 11, line 46-53 (describing the use of the traveling direction of the vehicle to select a node as a starting point of searching at a higher level of the hierarchy). As such, the direction of travel used in Fujita's system is an attribute of the vehicle and is not attribute of a road. Accordingly, the direction of travel disclosed in column 10, lines 11-60 does not constitute a direction of travel from a starting node to an ending node, as recited in claim 1.

Moreover, Fujita, in column 10, lines 11-34 and column 11, lines 43-63, merely discloses using information about the current position of the vehicle and the traveling direction of the vehicle to search for a path. Thus, this portion of Fujita does not disclose using at least one directed link to determine a preferred route from the origin to the destination, as recited in claim 1.

With respect to FIG. 13, Fujita discloses "a diagram showing the situation of the determination of a search starting point in a higher hierarchy" in which "one of the nodes is selected as a search starting point at the higher level on the basis of the direction of the opposite

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search starting point (on the side of the destination point as opposed to the side of the point of departure) and the traveling direction of the vehicle." Fujita at col. 3, lines 66-67 and col. 11, lines 46-53. See also Fujita at FIG. 13 (showing text describing the depicted arrow as indicating that the arrow represents the "DIRECTION OF DESTINATION POINT") and column 11, lines 54-59 (stating "[i]n the case of FIG. 13, among the intersections between the roads of the higher level, the intersection which is near the direction of the destination point and which is included within a predetermined angular extent from the traveling direction is set as the search starting point at the higher level."). FIG. 13 discloses the direction of the destination and does not describe or suggest a direction of travel from a starting node to an ending node.

Moreover, Fujita in FIG. 13 and column 11, lines 46-53 describing FIG. 13 does not disclose using at least one directed link to determine a preferred route from the origin to the destination. Rather, Fujita merely discloses using information about the current position of the vehicle and the traveling direction of the vehicle to search for a path. Thus, Fujita in FIG. 13 does not disclose using at least one directed link to determine a preferred route from the origin to the destination, as recited in claim 1.

Thus, Fujita does not describe or suggest using a routing graph representing a network of roads in which a directed link of the routing graph is associated with a direction of travel along the directed link from a starting node to an ending node. Nor does Fujita disclose a network of roads in which at least two of the directed links are associated with two nodes that are the same such that (1) a starting node of a first link of the at least two directed links is a same node as an ending node of a second link of the at least two directed links and (2) and an ending node of the first link of the at least two directed links is the same node as a starting node of the second link of the at least two directed link, as recited in claim 1. Neither does Fujita describe or suggest using the routing system to determine a preferred route from the origin to the destination by using at least one directed link, as recited in independent claim 1.

For at least these reasons, applicant requests withdrawal of the rejection of independent claim 1 and its dependent claims 2-9 and 11.

Similarly to independent claim 1, independent claims 13 and 25 each recite a similar feature of using a routing system to access an origin and a destination in a routing graph representing a network of roads including two or more nodes and two or more directed links

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where each directed link is associated with a direction of travel from a starting node to an ending node and at least two of the directed links are associated with two nodes that are the same such that (1) a starting node of a first link of the at least two directed links is a same node as an ending node of a second link of the at least two directed links and (2) and an ending node of the first link of the at least two directed links is the same node as a starting node of the second link of the at least two directed link. Independent claim 13 recites these features in the context of a computer-readable medium, while independent claim 25 recites these features in the context of a system. Accordingly, for the reasons discussed above with respect to claim 1, applicant requests withdrawal of the rejection of independent claims 13 and 25 and their dependent claims 14-21, 23, 26-33, and 35.

Rejection under Section 103

Claims 10, 12, 22, 24, 34 and 36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Fujita in view of Ohmura (2002/0077745). Ohmura discloses a distribution system for mapping information. *See* Ohmura at Abstract. Ohmura does not remedy the failure of Fujita to disclose the subject matter of claims 1, 13 and 25.

Therefore, neither Fujita, Ohmura, nor the combination of the two describe or suggest the subject matter of claims 1, 13 and 25. For at least these reasons, applicant requests reconsideration and withdrawal of this rejection in view of the reasons described above with respect to independent claims 1, 13 and 25, from which claims 10, 12, 22, 24, 34 and 36 respectively depend.

Claims 37-39

Each of claims 37-39 depend from one of independent claims 1, 13 or 25, respectively. At least for the reason of those dependencies, applicant submits that claims 37-39 are allowable.

Conclusion

It is believed that all of the pending issues have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims)

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that have not been expressed. Finally, nothing in this reply should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this reply, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

No fee is believed due. Please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: January 7, 2005 Barbare A Benot

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Attorney's Docket No. 06975-318002	Express Mail Label No.	Mailing Date March 16, 2004	For PTO Use Only Do Not Mark in This Area
Application No. New Continuation	Filing Date March 16, 2004	Attomey/Secretary Init WKR/BVB/sxw	
Title of the Invention	UTE DETERMINATION	ON	
Applicant David W. Nesbitt			
Enclosures			
❖ Transmittal Letter (2 pages)			910
 Continuation Application (1 page of cover sheet, 35 pages of specification, 6 pages of claims, 39 total claims after 			1
amendment, 3 independent claims, 1 page of abstract)			MAR 1 6 200 C
Drawings (formal, 10 sheets)			
 Preliminary Amendment (10 pages) Information Disclosure Statement (2 pages) 			PADEMARK OFFER
❖ Form PTO-1449 (1 page)			AUEMARE
Copy of Declaration and Power of Attorney (2 pages)			
 Copy of Notice of Recordation of Assignment (4 pages) Serial Number Card (green) 			·

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: David W. Nesbitt

Art Unit : Unknown

Serial No.: New Continuation Application

Examiner: Unknown

Filed

: March 16, 2004

Title

: AUTOMATED ROUTE DETERMINATION

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

PRELIMINARY AMENDMENT

Prior to examination, please amend the application as indicated on the following pages.

Amendments to the Specification begin at page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims which begins on page 3 of this paper.

Remarks/Arguments begin on page 10 of this paper.

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Amendments to the Specification:

Please replace the paragraph beginning at page 1, line 2 with the following paragraph:

CROSS-REFERENCE TO RELATED APPLICATION

This application is a continuation application of U.S. Application Serial No. 10/259,789, filed on September, 30, 2002, titled "Automated Route Determination," which claims priority from U.S. Provisional Application No. 60/406,629, filed August 29, 2002, titled "Automated Route Determination," both of which are incorporated by reference in their entirety.

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Applicant: David W. Nesbitt

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Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

(Currently amended) A method for determining a preferred route using a 1. computer-implemented routing system, the method comprising:

using a routing system to access an origin and a destination in a routing graph representing a network of roads including two or more nodes and one two or more directed links, each directed link being associated with a direction of travel from a starting node to an ending node and representing a road, and each node representing an intersection that includes at least one road, and at least two of the directed links being associated with two nodes that are the same such that (1) a starting node of a first link of the at least two directed links is a same node as an ending node of a second link of the at least two directed links and (2) and an ending node of the first link of the at least two directed links is the same node as a starting node of the second link of the at least two directed links;

using the routing system to determine a preferred route from the origin to the destination by using at least one directed link; and

communicating the preferred route from the routing system to a user system.

- (Original) The method of claim 1 wherein determining a preferred route from the 2. origin to the destination by using at least one directed link comprises determining a preferred route from the origin to the destination by comparing the density of directed links in a first region of the routing graph to the density of directed links in a second region of the routing group.
- (Original) The method of claim 1 wherein determining a preferred route from the 3. origin to the destination by using at least one directed link comprises determining a preferred

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route from the origin to the destination by applying a factor to a speed associated with a particular directed link based on the density of directed links in a region of the routing graph in which the particular directed link is located.

- (Original) The method of claim 1 wherein determining a preferred route from the 4. origin to the destination by using at least one directed link comprises determining a preferred route from the origin to the destination by using directed link information for at least one directed link.
- (Original) The method of claim 4 wherein the directed link information includes 5. one or more of a cost associated with the directed link, whether the directed link enters a nooutlet region, whether the directed link lies within a no-outlet region, and an intersection cost for each directed link-to-link transition.
- (Original) The method of claim 4 wherein determining a preferred route from the 6. origin to the destination by using at least one directed link comprises determining a preferred route from the origin to the destination by using node information for at least one node.
- (Original) The method of claim 6 wherein the node information includes one or 7. more directed links that link to the node, the number of driveable links that link to from the node, and the total number of links that link to the node.
- (Original) The method of claim 1 wherein the preferred route is a preferred route 8. for driving a vehicle from the origin to the destination.
- (Original) The method of claim 1 wherein the preferred route is a preferred route 9. for walking from the origin to the destination.
- (Original) The method of claim 1 wherein the routing system comprises a routing 10. system provided through an Internet service provider.

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(Original) The method of claim 1 wherein the routing system and the user system 11. use the same processor.

- (Original) The method of claim 1 wherein communicating the preferred route 12. comprises communicating the preferred route over a connection that is established using the Internet.
- (Currently amended) A computer-readable medium or propagated signal having 13. embodied thereon a computer program configured to determine a preferred route using a computer-implemented routing system, the medium or signal comprising one or more code segments configured to:

use a routing system to access an origin and a destination in a routing graph representing a network of roads including two or more nodes and one two or more directed links, each directed link being associated with a direction of travel from a starting node to an ending node and representing a road, and each node representing an intersection that includes at least one road, and at least two of the directed links being associated with two nodes that are the same such that (1) a starting node of a first link of the at least two directed links is a same node as an ending node of a second link of the at least two directed links and (2) and an ending node of the first link of the at least two directed links is the same node as a starting node of the second link of the at least two directed links;

use the routing system to determine a preferred route from the origin to the destination by using at least one directed link; and

communicate the preferred route from the routing system to a user system.

(Original) The medium or signal of claim 13 wherein determining a preferred 14. route from the origin to the destination by using at least one directed link comprises determining a preferred route from the origin to the destination by comparing the density of directed links in a first region of the routing graph to the density of directed links in a second region of the routing group.

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15. (Original) The medium or signal of claim 13 wherein determining a preferred route from the origin to the destination by using at least one directed link comprises determining a preferred route from the origin to the destination by applying a factor to a speed associated with a particular directed link based on the density of directed links in a region of the routing graph in which the particular directed link is located.

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- 16. (Original) The medium or signal of claim 13 wherein determining a preferred route from the origin to the destination by using at least one directed link comprises determining a preferred route from the origin to the destination by using directed link information for at least one directed link.
- 17. (Original) The medium or signal of claim 16 wherein the directed link information includes one or more of a cost associated with the directed link, whether the directed link enters a no-outlet region, whether the directed link lies within a no-outlet region, and an intersection cost for each directed link-to-link transition.
- 18. (Original) The medium or signal of claim 16 wherein determining a preferred route from the origin to the destination by using at least one directed link comprises determining a preferred route from the origin to the destination by using node information for at least one node.
- 19. (Original) The medium or signal of claim 18 wherein the node information includes one or more directed links that link to the node, the number of driveable links to from the node, and the total number of links that link to the node.
- 20. (Original) The medium or signal of claim 13 wherein the preferred route is a preferred route for driving a vehicle from the origin to the destination.

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(Original) The medium or signal of claim 13 wherein the preferred route is a 21. preferred route for walking from the origin to the destination.

- (Original) The medium or signal of claim 13 wherein the routing system 22. comprises a routing system provided through an Internet service provider.
- (Original) The medium or signal of claim 13 wherein the routing system and the 23. user system use the same processor.
- (Original) The medium or signal of claim 13 wherein communicating the 24. preferred route comprises communicating the preferred route over a connection that is established using the Internet.
- (Currently amended) A system for determining a preferred route using a 25. computer-implemented routing system, the system configured to:

access an origin and a destination in a routing graph representing a network of roads including two or more nodes and one two or more directed links, each directed link being associated with a direction of travel from a starting node to an ending node and representing a road, and each node representing an intersection that includes at least one road, and at least two of the directed links being associated with two nodes that are the same such that (1) a starting node of a first link of the at least two directed links is a same node as an ending node of a second link of the at least two directed links and (2) and an ending node of the first link of the at least two directed links is the same node as a starting node of the second link of the at least two directed links;

determine a preferred route from the origin to the destination by using at least one directed link; and

communicate the preferred route from the routing system to a user system.

(Original) The system of claim 25 wherein determining a preferred route from the 26. origin to the destination by using at least one directed link comprises determining a preferred

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route from the origin to the destination by comparing the density of directed links in a first region of the routing graph to the density of directed links in a second region of the routing group.

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- 27. (Original) The system of claim 25 wherein determining a preferred route from the origin to the destination by using at least one directed link comprises determining a preferred route from the origin to the destination by applying a factor to a speed associated with a particular directed link based on the density of directed links in a region of the routing graph in which the particular directed link is located.
- 28. (Original) The system of claim 25 wherein determining a preferred route from the origin to the destination by using at least one directed link comprises determining a preferred route from the origin to the destination by using directed link information for at least one directed link.
- 29. (Original) The system of claim 28 wherein the directed link information includes one or more of a cost associated with the directed link, whether the directed link enters a no-outlet region, whether the directed link lies within a no-outlet region, and an intersection cost for each directed link-to-link transition.
- 30. (Original) The system of claim 28 wherein determining a preferred route from the origin to the destination by using at least one directed link comprises determining a preferred route from the origin to the destination by using node information for at least one node.
- 31. (Original) The system of claim 30 wherein the node information includes one or more directed links that link to the node, the number of driveable links that link to from the node, and the total number of links that link to the node.
- 32. (Original) The system of claim 25 wherein the preferred route is a preferred route for driving a vehicle from the origin to the destination.

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(Original) The system of claim 25 wherein the preferred route is a preferred route 33. for walking from the origin to the destination.

- (Original) The system of claim 25 wherein the routing system comprises a routing 34. system provided through an Internet service provider.
- (Original) The system of claim 25 wherein the routing system and the user system 35. use the same processor.
- (Original) The system of claim 25 wherein communicating the preferred route 36. comprises communicating the preferred route over a connection that is established using the Internet.
- (New) The method of claim 1 wherein the routing graph includes two directed 37. links, each of which extending between a common pair of nodes but having different directions of travel associated therewith.
- (New) The medium or signal of claim 13 wherein the routing graph includes two 38. directed links, each of which extending between a common pair of nodes but having different directions of travel associated therewith.
- (New) The system of claim 25 wherein the routing graph includes two directed 39. links, each of which extending between a common pair of nodes but having different directions of travel associated therewith.

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REMARKS

Claims 1-39 are pending in this application, of which, claims 1, 13, and 25 are independent, claims 1, 13, and 25 are amended, and claims 37-39 are added. No new matter is added.

Applicant asks that all claims be examined in view of the amendment to the claims.

Enclosed is a \$1112.00 check for the filing fee (\$770) and for excess fee claims (\$342). Please apply any other charges or credits to deposit account 06-1050. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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Date: March 16, 2004

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